

## ABSTRACT

The present invention relates to *mda-5* nucleic acids, MDA-5 proteins, the *mda-5* promoter, and related molecules, and the use of each of these elements in protecting against or limiting viral infection, controlling cell proliferation, and promoting apoptosis. It is based upon the discovery that, contrary to earlier hypotheses based on the amino acid sequence of MDA-5, the protein is not a defective ATPase but rather exhibits ATPase activity. This supports the role of MDA-5 as a RNA helicase protein and consequently its use in promoting RNA degradation, for example in the context of antiviral defense, limitation of cell proliferation, or induction of apoptosis.